AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A system for printing a forensically marked image, comprising:

a processor for superimposing onto source data at least one forensic marking so as to create output data corresponding to the forensically marked image, the at least one forensic marking having

  an information marker indicative of the system, and

  a checksum marker proximate the information marker and indicative of the information marker; and

a printer coupled to the processor for printing the output data so as to produce the forensically marked image, the at least one forensic marking printed in a predetermined color having a low visual response to the human eye, but readily detectable by electronic scanning so as to identify the system.

2. (Original) The system of claim 1, wherein the forensic marker includes:

at least one location marker indicative of a location of the forensic marking proximate the information marker and the checksum marker.

3. (Original) The system of claim 1, wherein a portion of the source data and a portion of the at least one forensic marking are printed in the same image pixels on a printed medium.

4. (Original) The system of claim 1, wherein the information marker identifies the system sufficiently to enable tracing of the forensically marked image to the system.

5. (Original) The system of claim 1, wherein the information marker indicates that copying of the forensically marked image is prohibited.

6. (Original) The system of claim 1, further including:

a scanner coupled to the processor for acquiring the source data from a source image.

7. (Original) The system of claim 1, further including:

a data interface coupled to the processor for receiving in electronic form the source data corresponding to a source image.

8. (Original) The system of claim 1, wherein the forensic marking further includes:

at least one camouflage marker indicative of randomized data such that the visibility of the forensic markings due to replication on the forensically marked image is reduced.

9. (Original) The system of claim 2, wherein the forensic marking is rectangular, the forensic marking having

a first location marker located at one corner of the forensic marking, and

a second location marker different from the first location marker located at the diagonally opposite corner of the forensic marking.

10. (Original) The system of claim 9, wherein certain ones of the at least one forensic marking are rotated from certain others of the at least one forensic marking by a multiple of substantially 90 degrees, so as to reduce visual perceptibility of the pattern.

11. (Original) The system of claim 1, wherein the printer prints color images using cyan, magenta, and yellow colorant.

12. (Original) The system of claim 11, wherein the predetermined color is yellow.

13. (Original) The system of claim 12, wherein the forensic marking is an encoded pattern of yellow image pixels that is superimposed on source data which is printed with at

least one of cyan, magenta, and yellow inks.

14. (Original) The system of claim 1, wherein each individual one of the at least one forensic marking is a rectangular array of image pixels.

15. (Original) The system of claim 14, wherein the rectangular array is a sixty-four pixel by sixty-four pixel matrix.

16. (Original) The system of claim 15, wherein the rectangular array is divided into sixty-four eight pixel by eight pixel cells.

17. (Original) The system of claim 16, wherein colorant is deposited during printing in a predetermined location in at most one pixel of each of the eight pixel by eight pixel cells, such that the image quality is not significantly degraded by the forensic marking.

18. (Original) The system of claim 17, wherein a maximum print density of the forensic marking within the rectangular array is less than five percent.

19. (Original) The system of claim 17, wherein a maximum print density of the forensic marking within the rectangular array is approximately 1.5 percent.

20. (Original) The system of claim 1, wherein an individual forensic marking is replicated in multiple locations on the forensically marked image.

21. (Original) The system of claim 20, wherein the multiple locations are at predetermined pixel-row and pixel-column intervals

22. (Original) The system of claim 21, wherein the pixel-row and pixel-column intervals are 256 pixels.

23. (Original) The system of claim 22, wherein adjacent forensic markings are offset from each other by a predetermined number of pixel-rows.

24. (Original) The system of claim 23, wherein the predetermined number of pixel-rows is one.

25. (Original) The system of claim 6, further comprising:

detection means coupled to the scanner for detecting whether the source image contains copy-prohibited subject matter, and

control means responsive to the detection means and coupled to the printer for disabling the copying of the copy-prohibited subject matter.

26. (Original) A system for determining a device on which a printed medium was printed, comprising:

a media receptor adapted to receive the printed medium;

an image scanner in optical communication with the media handler for acquiring multicolor image data for the printed medium;

a color separation unit coupled to the image scanner for segregating predetermined color image data from the multicolor image data; and

a forensic identification unit coupled to the color separation unit for identifying in the predetermined color image data at least one forensic marking placed on the printed medium by the device, the forensic identification unit having

a locator subsystem for locating an individual one of the at least one forensic marking within the predetermined color image data,

a validation subsystem for analyzing the individual forensic marking so as to verify its integrity, and

an identification subsystem for analyzing the individual forensic marking so as to identify the device on which the printed medium was printed.

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27. (Original) A method for printing a forensically marked image with a printer, comprising:

encoding system information identifying the printer into an information marker;

calculating a checksum for the information marker;

encoding the checksum into a checksum marker;

superimposing onto source data at least one encoded forensic marking containing the information marker and the checksum marker so as to create output data corresponding to the forensically marked image; and

printing the output data on a print medium so as to produce the forensically marked image, the at least one forensic marking printed using a predetermined color difficult to detect by the human eye, but readily detectable by electronic scanning so as to identify the system.

28. (Original) The method of claim 27, further comprising:

adding to each of the at least one forensic markings at least one location marker indicative of a location of the forensic marking on the print medium.

29. (Original) The method of claim 28, wherein the at least one location marker is further indicative of the orientation of the forensic marking on the print medium.

30. (Original) The method of claim 27, wherein the printing the output data further includes

printing the at least one forensic marking using yellow colorant.

31. (Original) The method of claim 27, further including:

rotating at least some of the individual ones of the at least one forensic marking by a multiple of 90 degrees prior to the printing

32. (Original) The method of claim 27, further including:

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adding to each of the at least one forensic markings at least one camouflage marker indicative of randomized data such that the visibility of the forensic markings due to replication on the print medium is reduced.

33. (Currently amended) A method for printing a forensically marked image on a print medium with a swath printer, comprising:

obtaining a swath of image data corresponding to a source image;

if more than a threshold amount of color data exists in the swath of image data, superimposing onto the image data a swath of at least one forensic marking having an encoded pattern of image pixels in graphical form, the forensic marking including a checksum marker indicative of forensic marking validity;

printing the image data on the print medium so as to generate a swath of the forensically marked image; and

repeating the obtaining, superimposing, and printing until all the swaths of image data are printed.

34. (Original) The method of claim 33, wherein the threshold amount of color data is 64 pixels.

35. (Original) A method of determining the printing device on which a forensically marked image was printed, the forensically marked image having at least one forensic marking including an information marker indicative of the printing device and a checksum marker indicative of the information marker, comprising:

scanning the forensically marked image to locate an individual one of the at least one forensic marking;

calculating a calculated checksum for the information marker of the individual forensic marking;

decoding the checksum marker of the individual forensic marking to determine a printed checksum; and

if the calculated checksum matches the printed checksum, decoding the information marker to determine the printing device.

36. (Original) The method of claim 35, wherein the at least one forensic marking is of a predetermined color, and wherein the scanning includes:

color separating the scanned image to isolate image information for the predetermined color.

37. (Original) A printer, comprising:

an interface adapted for receiving printable image data;

a processor for

encoding system information identifying the printer into an information marker,

calculating a checksum for the information marker,

encoding the checksum into a checksum marker,

combining the information marker and the checksum marker into a forensic marking, and

superimposing onto the printable image data at least one copy of the forensic marking; and

a print mechanism coupled to the processor for printing the printable image data in a graphic form detectable by electronic scanning but undetectable to the human eye.